

WHAT IS CLAIMED IS:

1. A corrosion-resistant chromium steel for architectural and civil engineering structural elements, comprising:

from about 0.0015 to about 0.02 mass percent C;
from about 0.0015 to about 0.02 mass percent N;
from about 0.1 to about 1.0 mass percent Si;
from about 0.1 to about 3.0 mass percent Mn;
more than about 5 mass percent to less than about 10 mass percent Cr;
from about 0.01 to about 3.0 mass percent Ni;
about 0.1 mass percent or less of Al;
about 0.05 mass percent or less of P;
about 0.03 mass percent or less of S;
from about 0.01 to about 1.0 mass percent Co; and
the balance being Fe and incidental impurities, the steel thereby having high long-term corrosion resistance and high weld-zone toughness.

2. The corrosion-resistant chromium steel for architectural and civil engineering structural elements according to claim 1, further comprising:

from about 0.01 to about 0.5 mass percent V; and
from about 0.001 to about 0.05 mass percent W,
wherein the Cr content is in the range of more than
about 5 mass percent to less than about 8 mass percent,
and a Z value represented by formula (1) is in the range
of 0.03 to 1.5:

$$Z \text{ value} = ([\%Co] + 1.5[\%V] + 4.8[\%W])$$

(1)

wherein [%Co], [%V], [%W], respectively, represent Co, V,
and W contents by mass percent.

3. The corrosion-resistant chromium steel for
architectural and civil engineering structural elements
according to claim 2, wherein the Cr content is in the
range of more than about 5 mass percent to less than about
7.5 mass percent and the W content is in the range of
about 0.005 to about 0.03 mass percent.

4. The corrosion-resistant chromium steel for
architectural and civil engineering structural elements
according to claim 1, further comprising at least one of
about 3.0 mass percent or less of Cu and about 3.0 mass
percent or less of Mo.

5. The corrosion-resistant chromium steel for architectural and civil engineering structural elements according to claim 2, further comprising at least one of about 3.0 mass percent or less of Cu and about 3.0 mass percent or less of Mo.

6. The corrosion-resistant chromium steel for architectural and civil engineering structural elements according to claim 3, further comprising at least one of about 3.0 mass percent or less of Cu and about 3.0 mass percent or less of Mo.

7. The corrosion-resistant chromium steel for architectural and civil engineering structural elements according to claim 1, further comprising from about 0.0002 to about 0.0030 mass percent of B.

8. The corrosion-resistant chromium steel for architectural and civil engineering structural elements according to claim 2, further comprising from about 0.0002 to about 0.0030 mass percent of B.

9. The corrosion-resistant chromium steel for architectural and civil engineering structural elements according to claim 3, further comprising from about 0.0002 to about 0.0030 mass percent of B.

10. The corrosion-resistant chromium steel for

architectural and civil engineering structural elements
according to claim 4, further comprising from about 0.0002
to about 0.0030 mass percent of B.

2025-04-04 14:00:00